

Amendments to the Drawings

The attached replacement drawing sheet includes changes to Fig. 1. The replacement sheet replaces the original drawing sheet including Fig. 1.

In Fig. 1, a legend "Prior Art" has been added.

REMARKS

Applicants have carefully considered the July 26, 2006 Office Action, and the amendments above together with the comments that follow are presented in a bona fide effort to address all issues raised in that Action and thereby place this case in condition for allowance. Claims were pending in this application. In response to the Office Action dated July 26, 2006, claims 11, 12, 17 to 22 have been amended. Care has been exercised to avoid the introduction of new matter. Adequate descriptive support for the present Amendment should be apparent throughout the originally filed disclosure as, for example, the depicted embodiments and related discussion thereof in the written description of the specification, including page 15, lines 5-18 and page 15, lines 19-25. Applicants submit that the present Amendment does not generate any new matter issue. Entry of the present Amendment is respectfully solicited. It is believed that this response places this case in condition for allowance. Hence, prompt favorable reconsideration of this case is solicited.

Fig. 1 has been amended to overcome the Examiner's objections to the drawings without adding any new matter and in full compliance with the statutory requirements. In particular, previously omitted designation such as "Prior Art" has been added. A replacement sheet accompanies the present Amendment.

Claims 12, 16, 18, 20, 22, 24, 26, 28 and 30 were rejected under 35 U.S.C. § 102(a) as being anticipated over Tsugawa (JP 2004-304659, hereinafter "Tsugawa"). Applicants respectfully traverse.

Applicants respectfully submit that Tsugawa does not qualify as "prior art" under 35 U.S.C. § 102. The present application is the U.S. National Phase under 35 U.S.C. § 371 of International Application No. PCT/JP2004/007613, filed on June 2, 2004, which in turn claims

the benefit of Japanese Application No. 2003-161128, filed on June 5, 2003, and Japanese Application No. 2004-156002, filed on May 26, 2004.

Applicants note that the USPTO previously determined that International Application No. PCT/JP04/07613 meets the requirements of 35 U.S.C. § 371 and accepted the present application for national patentability examination in the USPTO. See Notice of Acceptance of Application Under 35 U.S.C. 371 and 37 CFR 1.495 (Form PCT/DO/EO/903) mailed on March 21, 2006.

Moreover, 35 U.S.C. § 365(c) discloses that in accordance with the conditions and requirements of section 120 of this title, an international application designating the United States shall be entitled to the benefit of the filings date of a prior national application or a prior international application designating the United States, and a national application shall be entitled to the benefit of the filing date of a prior international application designating the United States.

In the present case, the filing date of International Application no. PCT/JP04/07613 is **June 2, 2004**, which predates Tsugawa's publication date of **October 28, 2004**. Since the cited publication has no date that is effective as "prior" art before the filing date of the present application's international application, the anticipation rejection is untenable and should be withdrawn.

Claims 11-30 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al. (the JP 10-163730) in view of Fukuda et al. (the JP 11-027037). Applicants respectfully traverse.

Regarding independent claims 11 and 12, in the present invention, primary feeds include at least one pair of primary feeds installed closely and each of the two closely disposed primary feeds includes a dielectric loaded waveguide antenna where a dielectric body is loaded at an end opening of a waveguide, a center of the end of the dielectric body being located off the extension

of the waveguide's center axis and the centers of the ends of the dielectric bodies of the two closely disposed primary feeds being disposed at off-centered positions such that the centers are remotely spaced apart from each other. If the two primary feeds are disposed closely, mutual coupling phenomena occurs, resulting in the distortion of radio waves captured by the respective primary feeds. However, the distortion can be reduced by disposing the ends of the protrusions of the dielectric bodies at off centered positions in such a manner that they are remotely spaced apart from each other. Especially, the distance between the centers when the center of the end of dielectric body is located off the extension of the waveguide's center axis, can be larger than that between the centers when the center thereof is located on the extension thereof (see Fig. 11). Thus, even though the two primary feeds come close to each other, mutual coupling phenomena can be suppressed and the distortion can be reduced, so that communication sensitivity for the geostationary satellites can be improved.

In contrast, Fukuda et al. disclose that the center of the end of dielectric body is located on the extension of the waveguide's center axis. See Fig. 3. Therefore, the position of the center of the end of the dielectric body with respect to the waveguide's center axis in the present invention, is completely different from that of Fukuda et al. As a result, the distance between the centers of the ends of the dielectric bodies of the two primary feeds in the present invention can be larger than that in Fukuda et al. when other conditions are same (compare Fig. 3 of Fukuda et al. with Fig. 11 of the present invention). Thus, the effect of suppressing of mutual coupling phenomena of the present invention is considered to be more enhanced than that of Fukuda et al.

Accordingly, this ground of rejection is unsustainable, and should be withdrawn since Fukuda et al. neither discloses, suggests nor even implies the inventive features described in independent claims 11 and 12.

Regarding dependent claims 13 and 14, the Examiner asserts that it would have been an obvious matter of design choice to have a dielectric loaded waveguide being a dielectric loaded rectangular waveguide, since such a modification would have involved a mere change in the shape of a component. Applicants traverse.

In a rectangular waveguide, the lowest frequency (cutoff frequency) of a radio wave that can propagate through the waveguide is lower compared to that of a same size circular waveguide. Thus, the rectangular waveguide can ensure a desirable frequency band with a smaller tube than the circular waveguide. Therefore, the primary feed formed of the dielectric-loaded rectangular waveguide antenna can satisfy a higher degree of compactness required for a primary feed combined with the radio wave lens.

However, Fukuda et al. neither disclose, suggest nor even imply a rectangular waveguide described in claims 13 and 14 of the present invention and the above-described effect of the present inventions. Accordingly, this ground of rejection is unsustainable, and should be withdrawn.

Regarding dependent claims 15 and 16 in the present invention, the dielectric body of a dielectric-loaded waveguide antenna is protruded forward from the waveguide, and a protruded portion of the dielectric body is of a taper shape having a thinned end. Namely, in the present invention, whole protruded portion of the dielectric body is of a taper shape.

However, Fukuda et al. disclose that only the tip portion of the protruded portion of the dielectric body is of a taper shape and the bottom portion thereof is of a column shape. Therefore, the structure of the protruded portion of the dielectric body described in claims 15 and 16 of the present invention is totally different from that of Fukuda et al. Thus, this ground of rejection is unsustainable, and should be withdrawn.

Regarding dependent claims 19 to 22, in the present invention, in a plane including a cross section of the protruded portion of the dielectric body which is protruded forward from the waveguide, a dimension of the protruded portion in a disposed direction of the two primary feeds are smaller than that in a direction normal to the disposed direction of the two primary feeds, the cross section of the protruded portion being normal to the waveguide's center axis. Fig. 9 illustrates exemplary cross sectional views of the protrusions. In all the exemplified protrusions, the width w (minor axis of an ellipse) is smaller than the dimension d in the direction normal to the width (major axis of an ellipse). Thus, by setting the direction of the dielectric body in such a manner that the width direction coincides with the arranged direction of the two primary feeds, a distance between the dielectric bodies of the two primary feeds can be larger, so that the effect of suppressing mutual coupling phenomena can be enhanced.

However, Fukuda et al. neither disclose, suggest nor even imply the inventive features described in claims 19 to 22. Accordingly, this ground of rejection is unsustainable, and should be withdrawn.

As stated above, the prior art references do not show the inventive features of the present invention as set forth in claims 11 to 16 and 19 to 22. Accordingly, it is respectfully submitted that the claims 11 to 16 and 19 to 22 define patentable inventions over the prior art references and, are therefore, allowable.

It is also believed that dependent claims 17, 18, 23 to 30 directly or indirectly depending on independent claims 11 and 12 are allowable for the same reasons indicated with respect to claims 11 and 12 and further because of the additional features recited therein which, when taken alone and/or in combination with the features recited in claims 11 and 12 remove the invention defined therein further from the disclosures made in the cited references. If any independent

claim is non-obvious under 35 U.S.C. § 103(a), then any claim depending therefrom is non-obvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

It is believed that pending claims 11-30 are now in condition for allowance. Applicants therefore respectfully request an early and favorable reconsideration and allowance of this application. If there are any outstanding issues which might be resolved by an interview or an Examiner's amendment, the Examiner is invited to call Applicants' representative at the telephone number shown below.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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